"Make Energy a Consideration in All We Do"

ENERGY eXpress

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Low-Tech Solutions = High-Tech Energy Savings

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RAF Alconbury civil engineers are getting back to the basics and it's paying off. They've proven that simple, low-cost solutions save money and energy and the same principles can easily be repeated at other bases.

Point #1: High-tech control systems ONLY save energy when there is dedicated and trained staff to maintain them.

Air Force energy initiatives often include installing complex control systems in various buildings. Ideally, positions for "controls" technicians are retained in civil engineering to maintain these systems over their lifecycle. However, slots for these technicians may or may not survive downsizing. When high-tech building management systems fail and there is no staff on hand trained to maintain them, the control systems are often turned to manual. This overrides the automatic control settings. Once the equipment returns to operating 24-7, the opportunity to save energy with high-tech controls is lost.

Point #2: Low-tech solutions can actually save more energy at a lower cost.

RAF Alconbury has 91 modulating boilers that provide interior heat and hot water across the base, many of which were operating 24 hours a day, 7 days a week. HVAC Foreman, Mr. Stuart Chalmers decided to take initiative and save energy with a low-cost, low-tech solution that does not require certification and accreditation.

Mr. Chalmers installed simple mechanical time clocks and frost protection sensors on the boilers for a fraction of the cost of more sophisticated controls. These devices ensure boilers operate only when the buildings are occupied or when outside temperatures drop below freezing and pipes might freeze. Installing time clocks and frost sensors cost roughly $396 per location and take four hours for one skilled person to install. This initiative will reduce natural gas consumption an estimated 25 percent per year. The controls are easy to replace or repair if they fail, and clearly demonstrate a low-tech, low-cost solution can outlive the energy savings from high-tech, complex systems that cannot be adequately maintained.

Point #3: Enforce no heat/no cool seasons.

Base leadership plays an important role in changing the culture and can save energy by simply enforcing energy conservation standards. RAF Alconbury

STORY CONTINUED ON PAGE 2

Sidebar Photo: This solar array installed this month at AFCESA, Tyndall AFB, Fla., will save $10,000 and reduce electrical consumption approximately 100,000 kilowatt hours annually. (Photo by Mr. Eddie Green)

Low-Tech...

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maintains strict temperature set points for the heating and cooling season, which are enforced by base leadership.

Point #4: Preventive maintenance really works.

RAF Alconbury's Base Civil Engineer, Col Eric Fajardo, heavily emphasizes the recurring work program as a top priority in Operations. He encourages the shops to only take on work orders as time permits. The shops have found there are fewer complaints of failing equipment because most issues are being identified and resolved through proper, routine, preventive maintenance. Besides reducing complaints, this program directly contributes to energy savings because the equipment is running at peak performance over its lifecycle.

In addition, the HVAC shop conducts regular combustion efficiency tests and documents the results in the boiler log books. Despite the fact that 40 percent of RAF Alconbury's boilers are 25 years or older, 100 percent of the boilers are operating above 80 percent efficiency. The HVAC shop noted a one percent decrease in boiler efficiency correlates to a five percent increase in fuel consumption. Based on this, the shop immediately tends to any boilers with one percent or higher change in boiler efficiency. Combustion tests only take a few minutes to perform and can reap huge benefits in energy and dollar savings over the life of the boilers.

Point #5: Shifting from contract to in-house…we can do it.

Many bases contract their HVAC corrosion control (i.e., chemical treatment) program. The quality assurance personnel assigned to this contract may or may not have hands-on experience maintaining HVAC equipment. Over time, a poorly implemented corrosion control program can cause a safety concern, impact HVAC equipment life and performance, and ultimately result in wasted energy and avoidable equipment replacement costs.

At RAF Alconbury, the HVAC shop took initiative to manage its boiler chemical treatment program in-house. The foreman procured chemical training and two test kits the size of a briefcase for $1,596. Two trained craftsmen trained the remainder of the shop. The shop regularly checks conductivity, pH, and soluble iron and molybdate levels in the boiler water. The results of the water testing and dosing is carefully logged.

Proper chemical treatment is vital in the long-term operation and maintenance of the HVAC equipment. Training and test kits for the in-house workforce were not overly expensive and the energy and maintenance benefits will last forever.

In USAFE, the HQ Energy Manager and HVAC Program Manager are teaming to make sure the high-tech solutions developed by the engineers will pass muster when they reach the boots on the ground in the shops. Preventive maintenance at every base is essential to ensuring the highest efficiency and longest life for the equipment we already own. With respect to improving our "home", we encourage our shops to innovate low-tech, low-cost sustainable solutions, since they are closest to understanding the maintenance implications of each technology. We can save energy now and well into the future, if we do it smart, and we do it together.

RAF Alconbury HVAC Foreman, Mr. Stuart Chalmers, installs a low-cost mechanical time clock on a boiler. This small device is expected to save 35 percent of the fuel used by the boilers every year. (Photo by Mr. Sam Williams)

Energy Use Falls 21% at Columbus Air Force Base

A1C Charles Dickens
14th Flying Training Wing Public Affairs

As the Air Force moves to become more energy efficient many bases are taking the lead in conservation.

Columbus Air Force Base, Miss., recently won the Air Education and Training Command's Energy Incentive Award of $250,000. Columbus had the greatest decrease in energy use of all AETC bases for the past quarter compared to the past three years' consumption.

"The executive order says we're supposed to reduce energy intensity by three percent each year," said Columbus Energy Manager Dr. Carl James. "This first quarter our energy usage was 21.5 percent lower than last year."

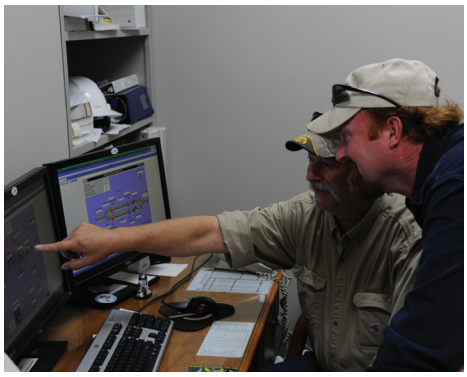
The Energy Incentive Award was previously presented annually but was recently changed to a quarterly award. Columbus AFB is the first quarterly recipient of the award. The switch to quarterly awards allows bases that may be behind during the first quarter to have an opportunity to win in the quarters to follow.

"We've still got a long way to go. There's more energy to be saved," said Dr. James. "This award was not a 'one-hit-wonder.' This is going to continue."

Dr. James says replacing older equipment with more energy-efficient equipment and telling tenants to turn off devices such as lights and computers when not in use has some impact, but it's not where the biggest savings come from.

"Over half of the energy use in a building comes from the heating, ventilation and air conditioning, and water heating systems," said Dr. James. "The occupants have little control over these so that's where I chose to focus."

Dr. James says the majority of energy conservation comes from working behind the scenes as opposed to directly at the source. Changing the way things are operated as opposed to just replacing equipment has given the best results for Columbus AFB.



Energy Management and Control System Technician Mr. John Enyart shows HVAC Technician Mr. Rick Stewart how to manage HVAC systems on the EMCS screen at Columbus Air Force Base. (Photo by A1C Charles Dickens)

Following the base's 2011 Energy Strategic Plan, many of the corrections made to increase energy efficiency came from recalibrating sensors, adjusting control set points, and reprogramming controls. These changes cut down on over-ventilation of areas, unnecessary heating and cooling of buildings, and the use of HVAC in areas that are unoccupied at specific times.

"My goal is to change the philosophy from using older checklists to going out and digging to find what's wrong and fixing it," said Dr. James.

Dr. James stresses that energy efficiency is a team effort. "I've been given all of the support from leadership and from those doing the repairs. I couldn't ask for a better situation," said Dr. James. "It's amazing to see people come together for a common cause and accomplish things that seem to be impossible."

Spotlight on Success

Ceramic Coating Project Awarded

325 CONS (Tyndall AFB) awarded a pilot project for a ceramic coating application on a K-span building. This project measures energy savings between a Super Therm® coated facility and an identical control facility at the Silver Flag Exercise Site. Super Therm® is a ceramic based, water-borne, insulating coating, designed to block heat load, moisture penetration, and air infiltration over a surface and to reduce energy costs. Energy measurements begin after construction completion Aug. 20, 2012. (Mr. McLellan, HQ AFCESA/CENI, DSN 523-6453)

AFCESA to Buy RE Certificates

AFCESA developed and submitted the Air Force FY12 requirements for RECs to DLA Energy to meet its EPAct 2005 goal. DLA Energy's May solicitation will include 58,000 MWh of "Replacement RECs" from renewable energy sources placed in service after Jan. 1,1999 and 50,000 MWh of "Gap RECs" from sources placed in service before Jan. 1, 1999. OSD cleared this Air Force purchase requirement prior to AFCESA moving forward with the request. (Mr. Fillman, HQ AFCESA/CENR, DSN 523-6265)

GSA Issues RFQ for AMRS

GSA issued a Request for Quote for an Advanced Meter Reading System with proposals due on June 8, 2012. Proposal evaluations and product demonstrations are expected to last 30-45 days. An award is anticipated for July 2012. (Mr. Ringenberg, HQ AFCESA/CENE, DSN 523-6012)

Maxwell CEs find savings with sustainable design

Ms. Karissa Arnett
42 CES/CEA, Asset Management Chief

Starting in his early days as a roofing technician, Mr. Pete Preskitt always felt there was a smarter way to repair roofs. He's now an engineer at Maxwell Air Force Base, Ala., and recently had the chance to put his ideas to the test.

The opportunity came in Building 826 at Gunter Annex, home of the Community College of the Air Force. Its deep, bronze standing-seam metal roof had 15 leaks. The roof was in such bad shape that building occupants had to relocate their desks and work areas around large trash cans filled with water. Facility Manager George Jones says, "The building occupants were creative. They created a funnel out of plastic sheeting to try to control the water flow. It really was not an optimum work environment."

Mr. Preskitt faced the challenge head on and came up with a solution. He wanted to try a different method of repair since other repairs had failed to fix the problem in the past. Partnering with a roofing manufacturer, Mr. Preskitt devised a way to preserve the existing metal roof, saving the cost of disposal of the existing roof materials, as well as, the cost of a full installation of a new metal roof. Their idea was to use a patented fabric coated system to cover all the seams and joints where the water was suspected of entering the building. In addition, the roof would then have a leak-free warranty for 10 years. Using this system resulted in over $100K in project savings versus replacing with another standing seam metal roof. They used the design process as an opportunity to take advantage of the "environmentally green" benefits of using a coating.

"I knew by using a lighter color than the existing deep-bronze that is commonly used across Gunter that we would get some energy benefits on the base utility bill," said Mr. Preskitt. He took his proposal all the way up the chain of command to make sure this new look would meet the compatibility standards of the 42 ABW.

Base Civil Engineer Mr. Mickey Allen says it was a step in the right direction. "Updating our design standards and being efficient will sometimes require us to balance appearance versus smarter applications. In this case, the outcome was both visually appealing and had a positive impact on our checkbook."

The facility received its new roof in September 2011. In addition to eliminating the leaks, the facility utility consumption has dropped by 17 percent, based on a seven-year utility bill average. Although a great gain, the reduction should be even more noticeable during the upcoming summer months when electricity bills tend to skyrocket from the Alabama heat.

This roof on Building 826 at Gunter Annex, Ala., no longer leaks in 15 places thanks to a fabric coated system to cover the seams and joints. The technique saved the base $100K compared to replacing the roof. (Photo by Mr. Tim Hooper)

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